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COMPUTER SCIENCE

NEWSLETTER

No. 102

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GENERAL NEWS

PAGE

Special Projects Being Implemented at UTCC 1
Personnel Changes 2

SYSTEM/370 SERVICES

S/370 Reliability 3
CALCOMP Usage 6
Credit Requests 11
High Speed Job Stream News 11
CRJE/TSO Services 13
EXECUTOR 14
Processor Changes 14
General Purpose Job Stream Advisor's Survey 16
User Forum 16
User Software Contributions 18
High Speed Job Stream Advisors 18

INTERACTIVE TERMINAL SYSTEMS

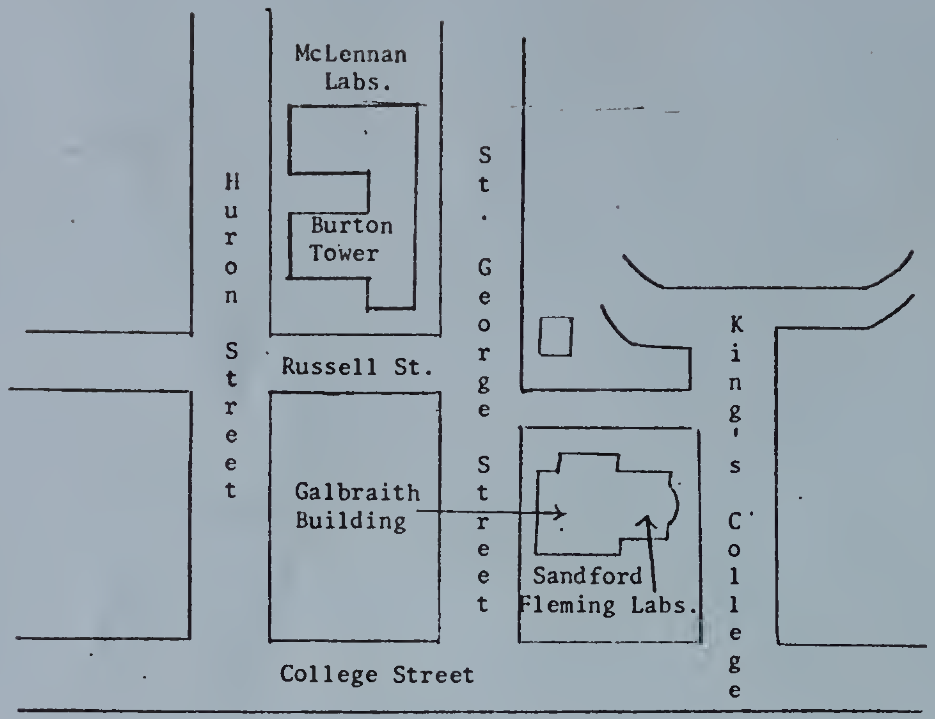
Interactive Systems Reliability 19

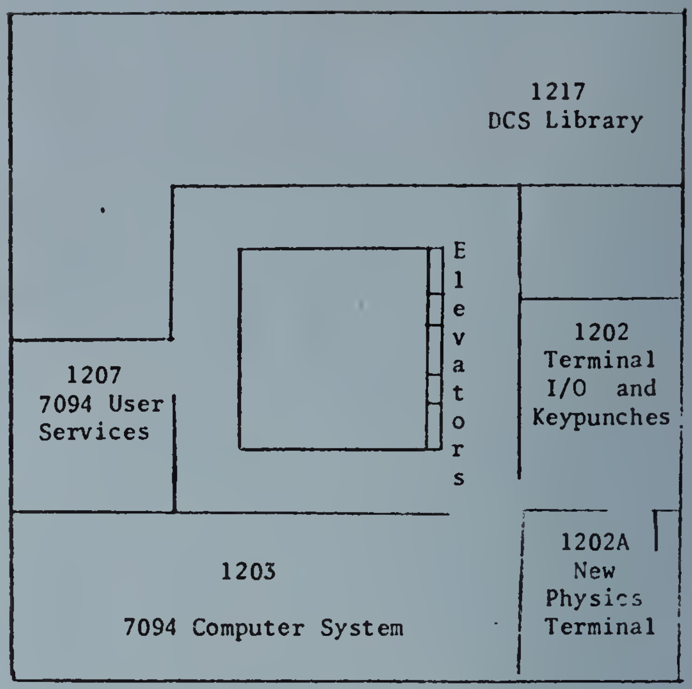
7094 SERVICES

7094 Production Breaks All Records in June 21
7094 Staff Projects 21

COMPUTER RESEARCH FACILITY

General News 22
Software Information 24
CRF "Small Computer Seminars" 25

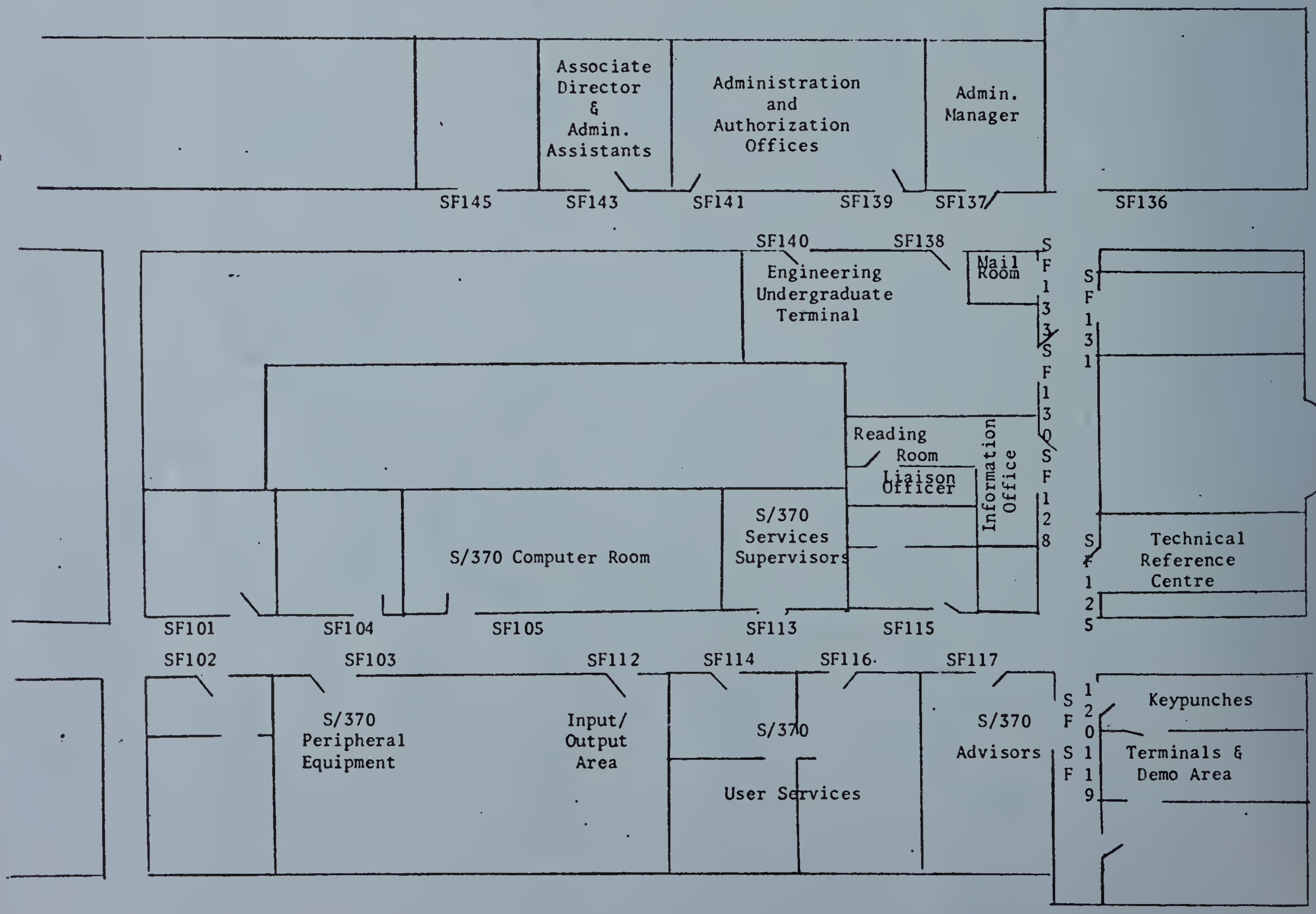




FLOOR PLAN: 12th Floor Burton Tower

FLOOR PLAN: UNIVERSITY OF TORONTO COMPUTER CENTRE

SANDFORD FLEMING LABORATORIES



SPECIAL PROJECTS BEING IMPLEMENTED AT UTCC

B. Greene

The UTCC Liaison Office has been involved in several special projects during the past month that might be of interest to our users.

An application combining the interactive capability of the System/360 and the remote batch capability of the S/370 has been implemented for the Faculty of Dentistry. The project involves the day to day maintenance of a large data base and the selective sorting and printing out of the contents of that data base. A programme has been completed that will take the contents of the file (written from APL to a magnetic tape), read the tape into the S/370, and print the output at any local or remote batch terminal.

The Liaison Office is also implementing a mailing system for the Council of Ontario Universities on the Interactive computer. This system features the capability of selecting from 72 different groups of individuals within the mailing list or making a general mailing to all members.

A project is also underway to place medical records for Sunnybrook Hospital on-line, to allow interactive up-dating of these records from Sunnybrook Hospital and to give the doctors the capability to selectively retrieve and examine records and do statistical analysis. The initial prototype of this system is now up and running.

As a public service to the government and also as a research project, the Liaison Office has worked with the government in Ottawa to provide terminal data bank facilities and communication facilities for the Commonwealth Heads of Government Meeting currently being held in Ottawa. The system has 18 terminals on-line through a Bell Data Route Network into the Interactive System. In Ottawa the terminals have been distributed one per hotel at the four delegate hotels, one per hotel at the five media hotels, one at each airport, and in the Media Control Centre, Delegate Control Centre and a master system monitor. The system enables the young ladies stationed at each terminal to locate any person participating in the conference, to leave messages for these people or to communicate directly with their respective control centres. A unique feature of the system is the capability to monitor all stations and to be aware of what terminals are on-line and who is manning them at any time.

In addition to the interactive aspects, it was also possible (using the programme developed for Dentistry, mentioned above) to prepare hotel and telephone directories for the visitors and to print them on a Remcom remote batch terminal located in the RCMP building in Ottawa at midnight, for publication and distribution to all members of the conference at 8:30 a.m. the next morning.

The information gained from these projects has greatly enlarged our understanding of large systems operating on the Interactive System and of proper data based management in each of these different situations. We wish to apologize to the interactive users for the slowdown in their programmes this week. We feel that we have learned techniques of improving system operation to prevent this slowdown.

For further information on any of these projects, or examination of special projects that might be of interest to any member of the Faculty, please contact Bill Greene at the User Liaison Office, 928-2694.

PERSONNEL CHANGES

P. Kellett

Summer seems to have brought out the restless instinct in some of our Computer Centre staff members. We regret to announce the departure of the following individuals: Ward Beattie, a System/370 Services programmer; Marilyn Hall, a System/370 Services secretary; and Joe Markarian, an Interactive Terminal Systems programmer-operator: all of whom have decided to continue their education. Ihor Trufyn, the Interactive Terminal Systems expert on terminals is planning to spend the next year travelling in Europe. Mike Hayes, a shift supervisor with System/370 Services has left us to work for the Bank of Montreal. Doug Flower, a programmer with Interactive Terminal Systems has left to pursue research on a project of personal interest: he will still be available to assist with the maintenance of the APL Brownbox Data Management (of which he was the author). We wish them all the best of luck in their new endeavours.

The summer has brought us two new staff members in System/370 Services. Vaughan Lawrason and Marlene Domoney have joined us in the capacity of programmers. Vaughan will be working out at Erindale College. We hope you will enjoy working with us.

S/370 RELIABILITY

R. Cavanagh

The System/370 uptime for the month of June was 98.5% of scheduled production time. The average number of unscheduled IPL's per day during June was 1.7. The high availability of May has been maintained and is an improvement over the early months of this year.

	% Uptime	Unsch IPL's/day
Jan 73	96.8	0.87
Feb 73	98.3	1.18
Mar 73	97.8	1.16
Apr 73	97.1	1.39
May 73	98.5	1.20
Jun 73	98.5	1.70

During June the average number of unscheduled IPL's per day increased. The increase was mainly due to both hardware and software problems occurring June 4 and 5.

The major causes of system downtime in June were:

June 1: Hardware problems in the block multiplexor and 3330 disk drives caused 160 minutes downtime.

June 4: Catastrophic errors occurred when a new HASP was installed. Fallback procedures were implemented.

June 5: 52 minutes of downtime were caused by a HASP HSJS Autobatching bug.

June 12: A power surge and the installation of two more 3330 disk drives caused two periods of downtime.

Other hardware and software problems during June have been identified and have been either fixed or are awaiting fixes from IBM. The installation of OS Release 21.7 went very smoothly with only a few minor problems.

DOWNTIME REPORT ON S370 FOR JUN '73

```
------------------------------------------------------------------------------------------------------------------------------------
|
|                                                          RLDS ( FREQ ) // DWNTME ( MIN )
|DAY   RELOADS  DOWNTIME     0    5   10   15   20   25   30   35   40   45   50   55   60   65   70   75   80   85   90   95  100
|========================    +----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
|  1         3       187     |⧆⧆⧆*************************************************************************************************<187>
|  2         0         0     |
|  3         0         0     |
|  4         9        76     |⧆⧆⧆⧆⧆⧆⧆⧆⧆*******************************************************************
|  5         6        52     |⧆⧆⧆⧆⧆⧆**********************************************
|  6         0         0     |
|  7         3        22     |⧆⧆⧆*******************
|  8         0         0     |
|  9         0         0     |
| 10         0         0     |
| 11         2        15     |⧆⧆*************
| 12         2        20     |⧆⧆******************
| 13         0         0     |
| 14         1         6     |⧆*****
| 15         2        10     |⧆⧆********
| 16         0         0     |
| 17         0         0     |
| 18         2        22     |⧆⧆********************
| 19         0         0     |
| 20         0         0     |
| 21         0         0     |
| 22         2        13     |⧆⧆***********
| 23         0         0     |
| 24         0         0     |
| 25         2        17     |⧆⧆***************
| 26         1        10     |⧆*********
| 27         1         5     |⧆****
| 28         2        13     |⧆⧆***********
| 29         1         7     |⧆******
| 30         0         0     |
------------------------------------------------------------------------------------------------------------------------------------

LEGEND :

  ONE QUAD ( '□' ) = ONE RELOAD
  ONE ASTERISK ( '*' ) = ONE MIN. OF DOWNTIME
```

```
                                                 S370 DOWNTIMES DURING JUN '73

----------------------------------------------------------------------------------------------------------------------------------
|                                                                      TIME OF DAY ( HOURS)                                      |
|    DAY  RELOADS  DOWNTIME     0   1   2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24|
|============================== +---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+|
|      1       3       187     |      S                                                    HH                HHHHHHHHHHH         |
|      2       0         0     |                                                                                                 |
|      3       0         0     |                                                                                                 |
|      4       9        76     |                                        SS      S        S SS SS                                 |
|      5       6        52     |  S                                                         SHHH H                               |
|      6       0         0     |                                                                                                 |
|      7       3        22     |                                              S                 S                                |
|      8       0         0     |                                                                                                 |
|      9       0         0     |                                                                                                 |
|     10       0         0     |                                                                                                 |
|     11       2        15     |                                                      S                                S         |
|     12       2        20     |                                                    H  H                                         |
|     13       0         0     |                                                                                                 |
|     14       1         6     |                                 S                                                               |
|     15       2        10     |                                I                           S                                    |
|     16       0         0     |                                                                                                 |
|     17       0         0     |                                                                                                 |
|     18       2        22     |H                                                                     S                          |
|     19       0         0     |                                                                                                 |
|     20       0         0     |                                                                                                 |
|     21       0         0     |                                                                                                 |
|     22       2        13     |         S                                               H                                       |
|     23       0         0     |                                                                                                 |
|     24       0         0     |                                                                                                 |
|     25       2        17     |                 S                                             S                                 |
|     26       1        10     |                                               S                                                 |
|     27       1         5     |                                 S                                                               |
|     28       2        13     |                                                                        H        S               |
|     29       1         7     |                                                                              S                  |
|     30       0         0     |                                                                                                 |
----------------------------------------------------------------------------------------------------------------------------------

  LEGEND :

    DOWN DUE TO LATE INITIAL IPL ----→ I
    DOWN DUE TO HARDWARE PROBLEMS ---→ H
    DOWN DUE TO SOFTWARE PROBLEMS ---→ S



          STATISTICS :


                                        TOTAL SCHEDULED HOURS OF PRODUCTION     357

                                        TOTAL DOWNTIME ( MIN) ...    475, AVG/DAY ...  15.83
                                        TOTAL RELOADS ..........      39, AVG/DAY ...   1.30

                                        DOWNTIME RATE IS    2.27 PERCENT OF SCHEDULED PRODUCTION HOURS
```

CALCOMP USAGE

R.N.M. Radcliffe

The following graphs are based on the System/ 370 Calcomp accounting records for the first half of this year (Jan. 1, 1973 to June 31, 1973). They give a fairly accurate overall picture of actual Calcomp usage for this period, but do not include replots or 7094 generated plots. The information is based on 5322 jobs, representing a total of 86,583 minutes of plotter time and results in an overall average of 47 jobs per day (including weekends, holidays and the extended period during which the plotter was down).

PLOT A

The first graph is plotting time (to the nearest minute) vs. percentage of total (number of jobs). Jobs requiring more than one hour are to the right of 60 minutes. The majority of jobs fall into the 1 to 3 minute slots, but a surprising number require more than one hour.

PLOT B

The second graph is cumulative plot time (i.e. jobs requiring n minutes or less) vs. percentage of total (number of jobs). From the graph the following may be read:

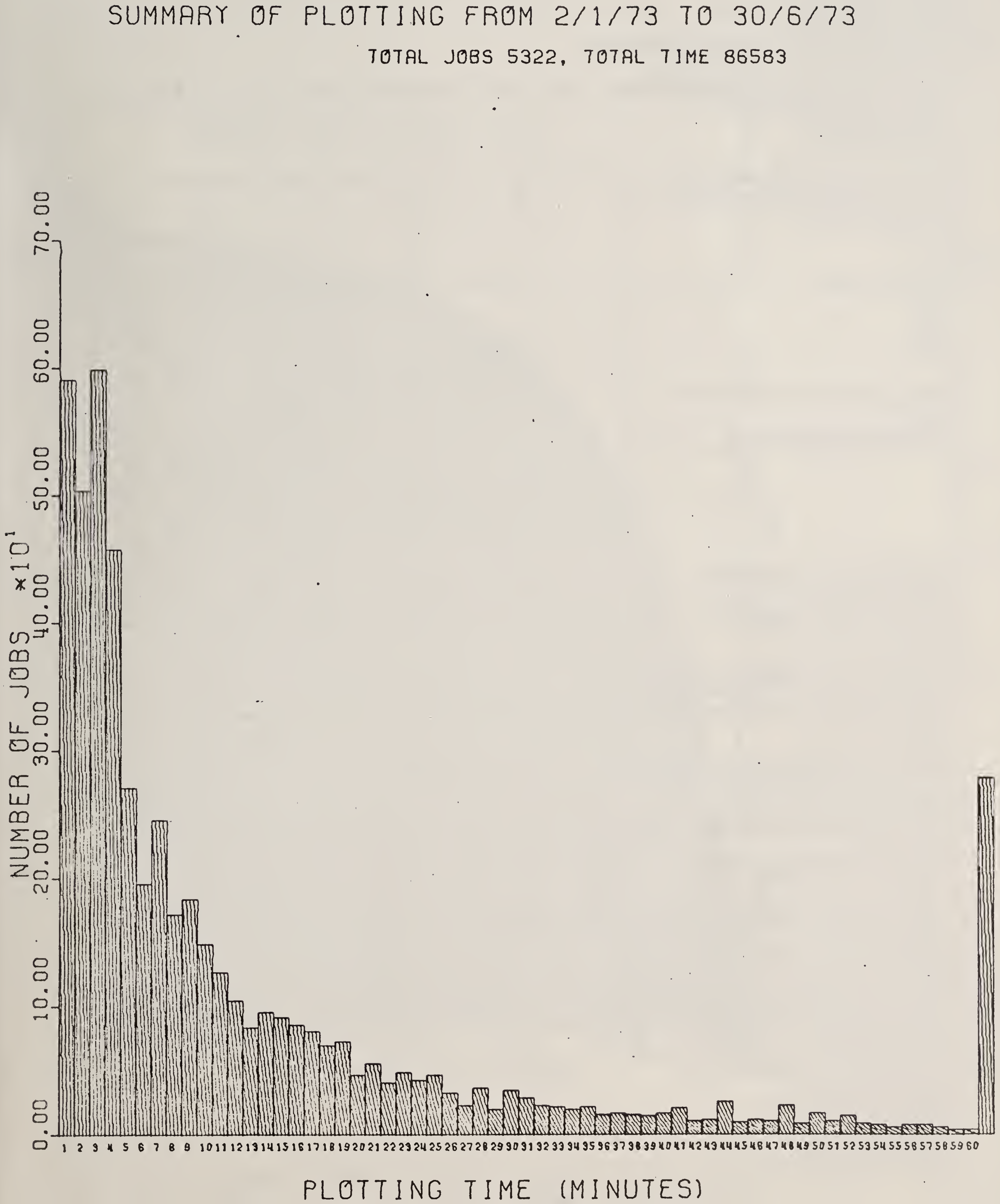
25% of the plots require 3 minutes or less
50% of the plots require 6 minutes or less
75% of the plots require 16 minutes or less
94% of the plots require 60 minutes or less

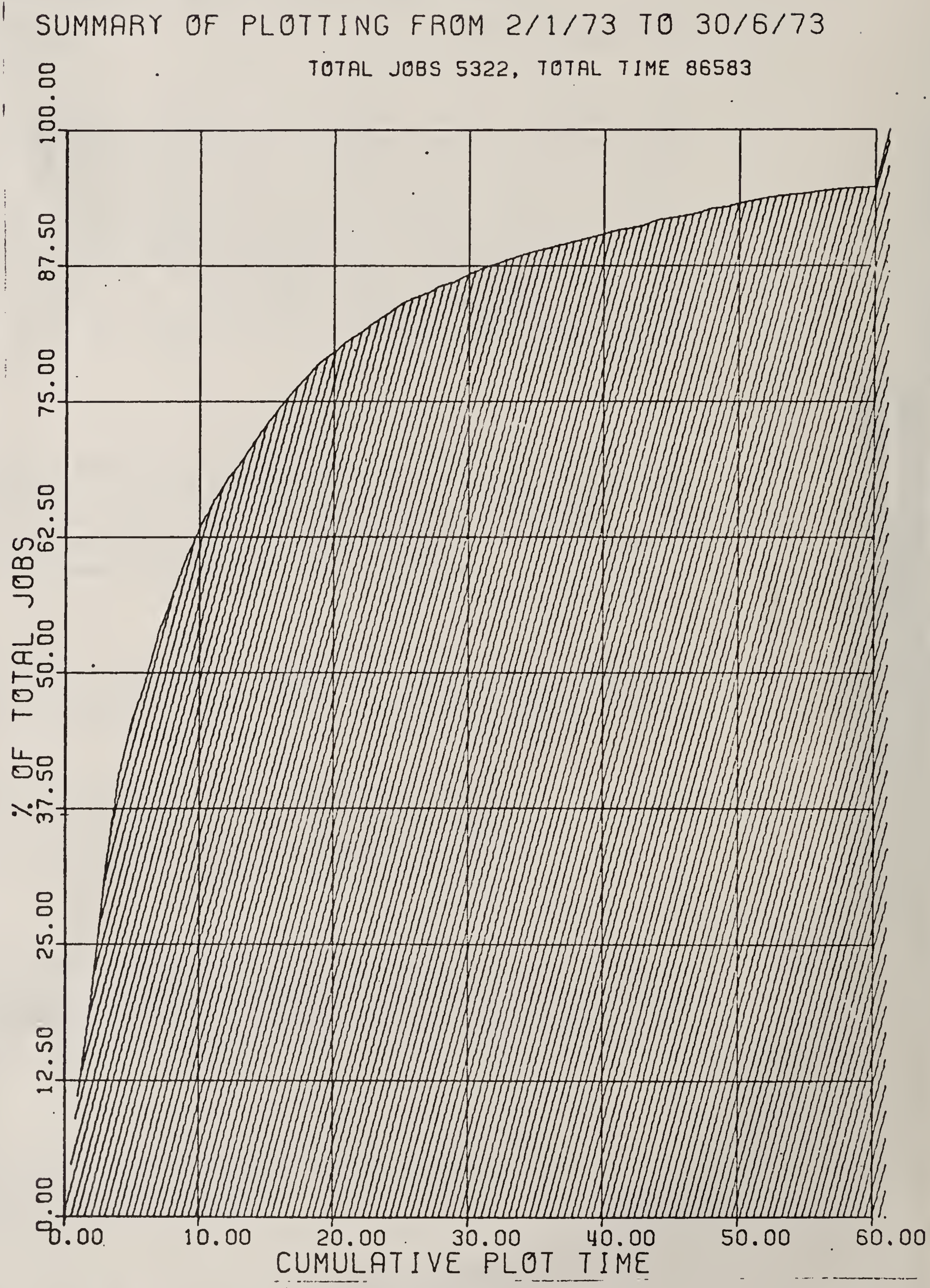
PLOT C

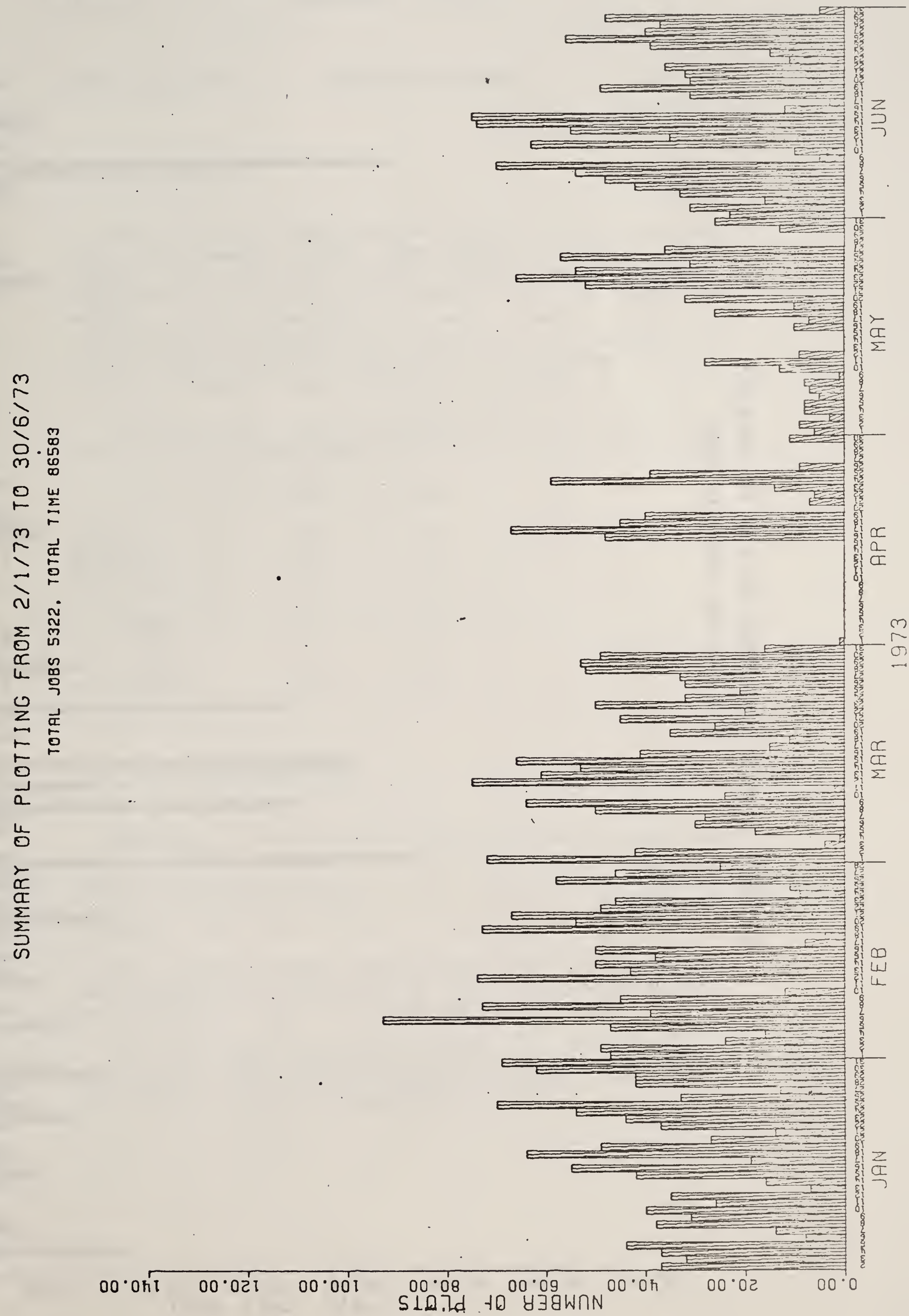
The third graph gives date vs. number of plots. Except during the extended plotter down time period, the load tends to remain the same from week to week, with low points on weekends.

PLOT D

The fourth graph gives date vs. plot time. The plot time per day is fairly random, with several days having exceptionally heavy loads.

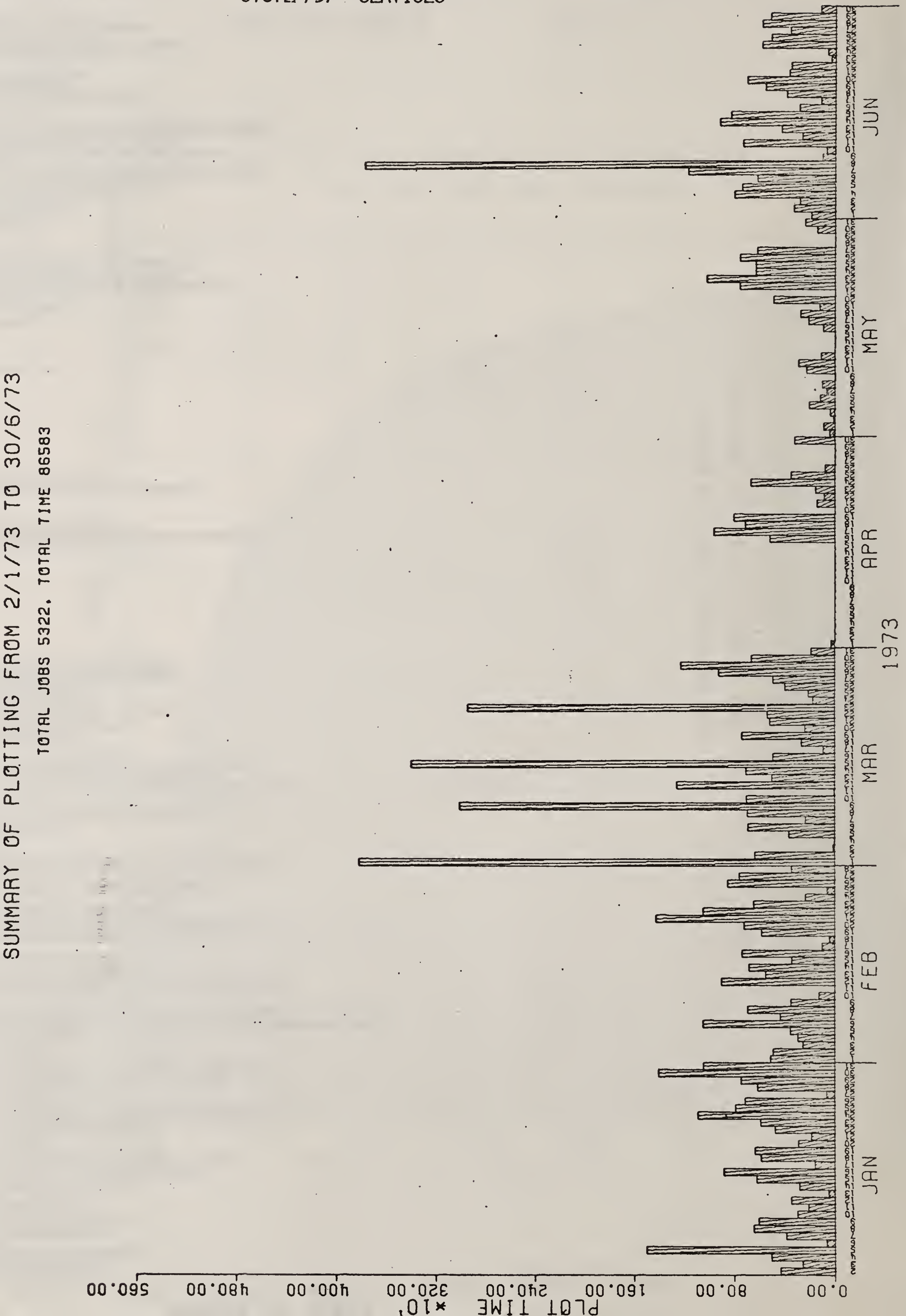

SUMMARY OF PLOTTING FROM 2/1/73 TO 30/6/73
TOTAL JOBS 5322, TOTAL TIME 86583
NUMBER OF JOBS $*10^1$
0.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60
PLOTTING TIME (MINUTES)


SUMMARY OF PLOTTING FROM 2/1/73 TO 30/6/73
TOTAL JOBS 5322, TOTAL TIME 86583
% OF TOTAL JOBS
100.00
87.50
75.00
62.50
50.00
37.50
25.00
12.50
0.00
0.00
10.00
20.00
30.00
40.00
50.00
60.00
CUMULATIVE PLOT TIME



SUMMARY OF PLOTTING FROM 2/1/73 TO 30/6/73

TOTAL JOBS 5322, TOTAL TIME 86583



SUMMARY OF PLOTTING FROM 2/1/73 TO 30/6/73

TOTAL JOBS 5322, TOTAL TIME 86583

CREDIT REQUESTS

R. Cox

The level of credit requests for the months of May and June was somewhat higher than previous months. Chief culprit has been the CalComp plotter which has been responsible for 40 hardware credits over the past two months. It is gratifying to note, however, that the installation of OS Release 21.7 resulted in no problems or credit requests and the implementation of Executor resulted in only 4 requests despite some early problems.

The table below gives a breakdown of credits granted for the months of May and June.

	May	June
Hardware	28	30
Software	13	17
Operational	17	25
TOTAL	72	58
# of Jobs	36020	33182
% of Jobs	0.19	0.17

HIGH SPEED JOB STREAM NEWS

M. Tapia

SWITCH35, a new version of the HSJS control program has been installed. SWITCH35, together with the new version of HASP, enables the computer to treat each HSJS job as an O/S job with one $JOB card per batch and results in improved job turnaround at a very low cost in terms of system resources.

As a result of these modifications, HSJS statistics are now available on a $JOB basis and are increasingly useful for determining trends in the HSJS processor usage.

The following statistics, compiled on a 24 hour basis, represent all HSJS jobs run during the month of June 1973. Note that CPU time is in hundredths of a minute.

```
ALL                   HSJS SUMMARY FOR  1/06/73 TO 30/06/73

PROCESSOR      #JOBS  % TOTAL |  #JOBS  TIME+----+----+----+----+----+----+----+----+----+----+
WATFIV    -W   27889   (67%) |     79     0|W
SPITBOL   -T     610   ( 1%) |    103      |WW
PL/C      -C    6225   (15%) |    145     1|WWW
REPRODUCE-R     2968   ( 7%) |     99      |WW
ALGOLW    -G     361   ( 0%) |     50     2|W
PLUTO     -P    1840   ( 4%) |     27      |
ASMG      -A    1035   ( 2%) |     30     3|W
WATBOL    -B     261   ( 0%) |     24      |W
SIMON     -S       9   ( 0%) |     48     4|W
                             |     23      |W
                             |     14     5|
OTHER     -?      73   ( 0%) |     26      |W
OTHER     -?      27   ( 0%) |      8     6|
                             |      0      |
                             |      0     7|
                             |      1      |
                             |    135     8|WWW
                             |    278      |WWWWWR
                             |    524     9|WWWWWWWWWWCR
                             |    825      |WWWWWWWWWWWWWWWWWCCRP
                             |    963    10|WWWWWWWWWWWWWWWWWWWWCCRRPA
                             |   1147      |WWWWWWWWWWWWWWWWWWWWWWCCCRRPA
                             |   1346    11|WWWWWWWWWWWWWWWWWWWWWWWWWWTCCCCRRRPA
                             |   1315      |WWWWWWWWWWWWWWWWWWWWWWWWWWTCCCCRPA
                             |   1320    12|WWWWWWWWWWWWWWWWWWWWWWWWWCCCCRRPPA
                             |   1370      |WWWWWWWWWWWWWWWWWWWWWWWWWTCCCCCCRPPAA
                             |   1358    13|WWWWWWWWWWWWWWWWWWWWWWWWTCCCCCCRPPA
                             |   1466      |WWWWWWWWWWWWWWWWWWWWWWWWWWCCCCCCRRPPA
                             |   1628    14|WWWWWWWWWWWWWWWWWWWWWWWWWWWWWCCCCCCCRRPPA
                             |   1748      |WWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWCCCCCCCRRPPA
                             |   1574    15|WWWWWWWWWWWWWWWWWWWWWWWWWWWWWCCCCCCRRPPA
                             |   1787      |WWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWCCCCCCCCRRPPA
                             |   1739    16|WWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWCCCCCCCRRPPA
                             |   1748      |WWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWCCCCCCCCRRPPA
                             |    996    17|WWWWWWWWWWWWWWWWWWWWCCCCR
                             |   1115      |WWWWWWWWWWWWWWWWWWWCCCCCRRRPA
                             |    955    18|WWWWWWWWWWWWWWWWTCCCCCRP
                             |    934      |WWWWWWWWWWWWWWWCCCCCCRPPA
                             |    784    19|WWWWWWWWWWWWWWCCCCRP
                             |    792      |WWWWWWWWWWWWCCCCCRPPA
                             |    813    20|WWWWWWWWWWWWWCCCCCRPP
                             |    833      |WWWWWWWWWWWWWWCCCCCRPP
                             |    794    21|WWWWWWWWWWWWWCCCCCRPP
                             |    856      |WWWWWWWWWWWWWCCCCCRPPA
                             |     55    22|W
                             |      2      |
                             |      3    23|
                             |     10      |
                                           +----+----+----+----+----+----+----+----+----+----+
                       TOTAL  41298        0        400       800       1200      1600      2000

                 HSJS RESOURCE USAGE BY PROCESSOR FOR  1/06/73 TO 30/06/73

                 |  TOTAL  |  TOTAL  |  TOTAL   |  TOTAL   ||  AVG  |  AVG  |  AVG  ||
                 |  #JOBS  |   CPU   |  CARDS   |  LINES   ||  CPU  | CARDS | LINES ||
-------------------------------------------------------------------------------------
WATFIV    -W     |  27889  |   8545  |  7622269 |  8309258 ||    0  |  273  |  297  ||
SPITBOL   -T     |    610  |     85  |   134101 |   164957 ||    0  |  219  |  270  ||
PL/C      -C     |   6225  |   1544  |   771819 |  1241658 ||    0  |  123  |  199  ||
REPRODUCE-R      |   2968  |    122  |  1000047 |  1088712 ||    0  |  336  |  366  ||
ALGOLW    -G     |    361  |    125  |   124564 |   139868 ||    0  |  345  |  387  ||
PLUTO     -P     |   1840  |    427  |   272118 |   411160 ||    0  |  147  |  223  ||
ASMG      -A     |   1035  |    702  |   481473 |   567837 ||    0  |  465  |  548  ||
WATBOL    -B     |    261  |     55  |    62701 |    59003 ||    0  |  240  |  226  ||
SIMON     -S     |      9  |      0  |      280 |      713 ||    0  |   31  |   79  ||
                 |         |         |          |          ||       |       |       ||
                 |         |         |          |          ||       |       |       ||
OTHER     -?     |     73  |      0  |     2660 |    11512 ||    0  |   36  |  157  ||
OTHER     -?     |     27  |      0  |      760 |     2001 ||    0  |   28  |   74  ||
-------------------------------------------------------------------------------------
           TOTAL  41298       11605   10472792   11996679         0     253     290
```

CRJE/TSO SERVICES

J. Wettlaufer

In last month's Newsletter, S/370 Services announced that TSO-RJE was being tested and evaluated as a possible replacement for CRJE. Testing has progressed through the stages outlined below.

Initially TSO was run for short periods of time during intervals when the demand on the system resources was very low. After TSO was established as a reliable system which did not degrade the existing integrity of O.S., testing of TSO reliability was extended to include peak operating periods when the job load on the S/370-165 was heavier. Test results indicated that no O.S. failures could be attributed to TSO.

In addition to the reliability testing outlined above, the performance of TSO is constantly being evaluated by means of hardware and software monitoring of the system. A simulator obtained from Bell Labs is being used to simulate large numbers of users logged on to TSO and thus measure the responsiveness of the system under these conditions. The data obtained from these simulations is utilized in tuning TSO for optimal responsiveness while continuing to accommodate the existing batch load on the system.

During the third week in July, TSO was made available to all users for evaluating and acceptance testing. The final decision on CRJE vs TSO will be made after consideration of performance figures and user reaction to the summer's testing. The decision will be made no later than September 1, 1973, and a minimum of one month's notice will be given if CRJE is to be phased out.

Users should also be aware that S/370 Services is currently evaluating possible further enhancements for TSO-RJE and full function TSO time sharing facilities. An integrated TSO-RJE interface with HASP is being investigated.

S/370 Services will be pleased to demonstrate for users the features of TSO during low load periods. Any user interested in a demonstration of TSO-RJE, full function TSO, or anyone wishing additional information should contact John Wettlaufer at 928-6355.

EXECUTOR

T. Sellgren

EXECUTOR was implemented on the S/370-165 at the end of May in order to improve the turnaround time for the execution cycle of Class A jobs. It has been difficult to accurately determine the actual improvement from the daily production statistics, due to fluctuations in load, changes to the system and the effect of other classes. Controlled tests have shown that a particular set of Class A jobs which normally require 646 seconds to execute will run in 375 seconds under EXECUTOR. It is also known that as many as 75% of all Class A jobs go through the EXECUTOR processor. These facts seem to indicate that the observed improvement in turnaround for Class A jobs is a result of the implementation of EXECUTOR.

One change observed during the period of May 22 to June 9, before Release 21.7 was implemented, was an increase in the ratio of Problem State to CPU Busy. This could imply that fewer CPU cycles are being wasted on Supervisor activity and more productive problem program CPU is being used. This means that more productive work is being done in the same amount of time and explains the turnaround improvement noted in the tests. Some sample ratios obtained from the hardware monitor over an eight hour (9 am - 5 pm) period indicate a shift from 0.6 Problem State/CPU Busy to 0.7 through 0.75. The Problem State CPU time has increased from 40% to 50% which represents a net gain of 25% in productive CPU cycles.

The implementation of the latest maintenance release of the Operating System, i.e. Release 21.7, has reduced some of the gains brought about by EXECUTOR. The monitoring group is currently 'tuning' the new release in order to recoup the significant improvements on resource usage made possible by EXECUTOR.

PROCESSOR CHANGES

H. Kugel

Effective on or about August 15, 1973, UTCC will be making significant changes to the defaults in the UTCC procedures involving the FORTRAN and PL/1 compilers. The changes are necessitated by IBM's withdrawal of support for the PL/1-F and FORTRAN G Compilers. Non-support of these compilers means that, should a user encounter a situation where one of these compilers produces invalid code, IBM would be under no obligation to correct the bug and the user would be asked to recompile the source programs with a currently supported processor. UTCC will maintain backup copies of these compilers (as they exist at present) so that currently executing modules can be recompiled in the original language as long as the need exists.

The changes to the defaults in the UTCC procedures should be transparent for most jobs and all currently executing load modules should continue to run. However, some interface compatibility problems may arise between modules compiled in multiple languages. For example, modules that currently combine ASSEMBLER subprograms and PL/1-F may have to be adjusted to accommodate the different interface required between ASSEMBLER and the new PL/1 Checkout Compiler. For details, users should contact the Advisor in Room SF117.

Summary of Changes

The procedure PLIGO, PLI and PLILEGO will be modified so that LEVEL= will default to the PL/1 Checkout Compiler. Users will be able to obtain the PL/1-F Compiler by coding LEVEL=F on the EXEC statement.

The procedure PLILE will be modified to point at the PL/1 Optimizing Compiler as the Checkout Compiler cannot be used for load module creation.

The procedures FORT, FORTLE, FORTLEGO and FORTGO will be modified so that LEVEL= will default to the FORTRAN G-1 Compiler and MOD II FORTLIB. Users will be able to access the current FORTRAN G Compiler and the current SYS1.FORTLIB by coding LEVEL=G on the EXEC statement.

Coding LEVEL=X on the EXEC statement for FORTRAN procedures will be used to access the FORTRAN H-Extended Compiler.

Note that only the UTCC procedures involving the FORTRAN and PL/1 compilers are affected.

Implementation dates for the changes will be announced in HOTNEWS. Users with questions or problems should contact Herb Kugel at 928-7286.

GENERAL PURPOSE JOB STREAM ADVISOR'S SURVEY

S. Verscay

The advisors in Room SF117 have recently completed the second part of the survey of S/370 user inquiries. The number and the kind of questions were classified into 15 categories and recorded as either "answers" or "referrals". The results are summarized in the following table. Note that the figures in the first two columns of each time period apply to inquiries which were answered by the advisors. The figures in the third column represent inquiries within each category which were referred to consultants or other specialists.

	Jan. 1 - Mar.23			Mar. 26 - Jun. 29		
Category	Answered		Ref.	Answered		Ref.
a. JCL	1010	31%	14	876	23%	15
b. Fortran	630	19%	14	981	26%	17
c. PL/1	246	7%	17	331	8%	13
d. Assembler	101	3%	3	37	1%	2
e. Spitbol	39	1%	11	17	0%	3
f. Statistical	133	4%	34	123	3%	28
g. COBOL	78	2%	5	49	1%	4
h. Other Languages	66	2%	14	183	4%	15
i. Calcomp	147	4%	17	165	4%	8
j. CRJE	88	2%	7	62	1%	4
k. Tape/Disk	102	3%	7	185	4%	12
l. App. Software	66	2%	10	104	2%	19
m. Utilities	266	8%	16	366	9%	13
n. Other	174	5%	16	169	4%	18
o. Not S/370	81	2%	17	97	2%	10
All Inquiries	3227	100%	202	3745	100%	181
All Referrals	185	5%	185	171	4%	171
All Languages (bcdegh)	1160	35%	64	1598	42%	54
All Job and Data (akm)	1378	42%	37	1427	38%	40
All Other (fijln)	608	18%	84	623	16%	77

There were approximately 55 queries per day - the same in both time periods.

USER FORUM

D. Gibson

User Forums were organized to provide S/370 users with a preview of new developments within S/370 Services. Users are encouraged to attend the Forums and to comment on and criticize changes while they are still in the planning stage.

The User Forum held on July 13 was attended by a good cross-section of users and a wide range of topics were discussed. Lawrie Lubin announced plans for a S/370 Open House to be held in early September 1973. The Open House has been designed to provide an orientation program for new users, and a 'refresher course' for returning users to bring them up-to-date with changes which have occurred during their absence. The Open House will include tours, lectures, demonstrations and discussions. A detailed schedule listing dates and activities will appear in the next issue of the Newsletter.

John Boddy outlined the current status of TSO-RJE. Interested users should refer to the article 'CRJE/TSO SERVICES' appearing elsewhere in this Newsletter.

Rein Mikkor summarized some of the current and planned software changes. The Control Program of O.S. Release 21.7 was installed on June 9 and the Language Processors will be updated in August. The current processors will remain as the default. Other processor changes are described in Herb Kugel's article 'Processor Changes' in this issue of the Newsletter. EXECUTOR, a program which performs system resource allocation and replaces O.S. initiation for Class A jobs has been installed and most of the bugs have been identified and fixed. Two problems are outstanding: a job may wait if all the temporary datasets assigned to EXECUTOR are in use and, currently, temporary datasets may not exceed 100 tracks or approximately 1.3 million bytes. A fix for the former problem is known and will be implemented as soon as possible. The latter problem has been advertised and users are requested to contact the advisors in SF117 for a bypass.

Remote users should be aware that the Backlog Display Program and other preformatted display programs will be available for remote use with the arrival of the 3275 display terminals. The initial version will be located in the Arts and Science Terminal. Other future software changes include an option which will allow users to select a self-service printer at the local terminal and a new JCL indentation format which will facilitate the scanning of listings for JCL errors.

A lively question and answer period occupied the second half of the User Forum. Topics discussed included online storage problems, Preprocessor, HASP to HASP and full function TSO.

USER SOFTWARE CONTRIBUTIONS

M. Doherty

Users with programs that they would like to offer for general use are asked to leave their name, address, telephone number and a description of the program with

Miss Margaret Doherty
S/370 Internal Library
Room 125
Sanford Fleming Building

These programs will be considered for inclusion in the UTCC Program Library.

HIGH SPEED JOB STREAM ADVISORS

M. Tapia

System/370 Services require student programming advisors to assist the users of the High Speed Job Stream during the 1973/74 academic year.

Part-time work is available at the Engineering and Arts and Science Undergraduate Terminals between the hours of 10 a.m. and 6 p.m. Monday through Friday and on Saturdays at ASUT from 10 a.m. to 5 p.m. Applicants should have a good knowledge of WATFIV, PL/C and/or PLUTO as well as ASMG or SPITBOL.

Application forms may be obtained from the secretary in Room 112, Sandford Fleming Building.

INTERACTIVE SYSTEMS RELIABILITY

S. Goldfarb

The uptimes achieved in June for each of APL, ATS, and CPS were 99.00%, 98.90% and 98.79%, respectively. The total number of scheduled hours of operation during the period June 1 through June 30 was 451. In addition to the scheduled hours of operation, APL, ATS and CPS were available during approximately 118 hours of unattended weekend operation. On Sunday June 3, due to electrical shutdown Interactive System was closed from 8 a.m. until 5 p.m.

The following table summarizes the time lost out of scheduled hours of production. There was one late start due to hardware error resulting in a total delay of 6, 8 and 10 minutes for APL, ATS and CPS, respectively. The table shows the time lost due to system failures for each of the systems: 15 unscheduled IPL's were required as a result of the failures. Most of the hardware problems during June have been identified with 2361 core storage (LCS).

DATE	DOWNTIME (mins)			REASON
	APL	ATS	CPS	
Fri. Jun 1	55	59	63	*City Power Failure
Tue. Jun 5	25	27	30	**LCS Problem (Hardware)
Mon. Jun 11	10	11	13	*LCS Failure
Tue. Jun 12	16	17	18	*Power Surge
	22	23	24	*Undetermined
Sat. Jun 16	10	11	12	*Channel Error
Thu. Jun 21	13	15	17	*LCS Failure (Hardware)
Fri. Jun 22	22	24	26	*LCS Failure (Hardware)
	6	7	8	*Channel Errors
Sat. Jun 23	14	17	21	*LCS Failure (Hardware)
Mon. Jun 25	15	16	18	*LCS Failure (Hardware)
Tue. Jun 26	44	52	51	**LCS Failure
Fri. Jun 29	13	12	17	*LCS Failure
Total	265	291	318	*IPL Required

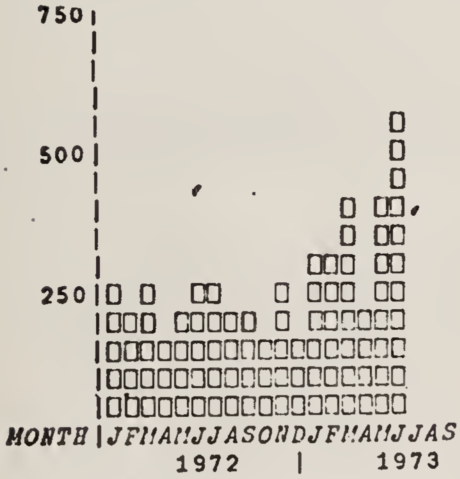
System Failures June 1 to June 30, 1973

7094 PRODUCTION BREAKS ALL RECORDS IN JUNE

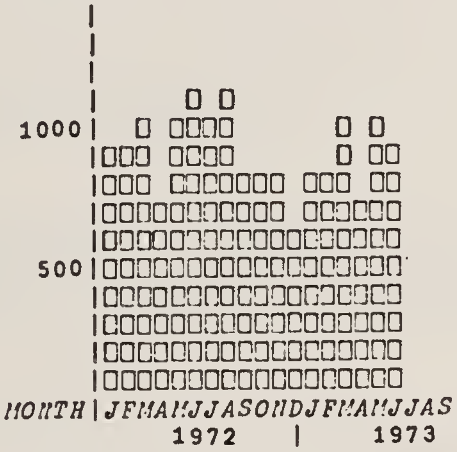
J. V. Walton

As the charts below show, 7094 usage reached an all-time high this June, although the number of jobs run remained steady around 900. The reason was a great deal of third-shift usage by the High Energy Physics group, who supplied their own operator to run very long jobs overnight. This is not a trend which can be expected to continue, since HEP's special project has terminated.

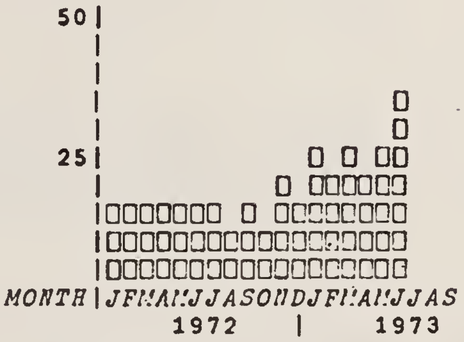
The previous record of approximately 500 hours per month was in June of 1969 during "Dispatcher" boom days.



·7094 *HOURS PER MONTH*



7094 *JOBS PER MONTH*



MINUTES PER 7094 *JOB*

7094 STAFF PROJECTS

J. V. Walton

One of our regular operators, Jeremy Skinner, has been devoting his spare time to developing the 7094-1401 utility software. In addition to several operational improvements to the 1401 utilities and the 7094 tape-dump program, Jeremy has written a disk-to-tape dump and restore package. This utility has been a desperate need in the installation for some years, particularly whenever our customer engineers have run disk surface diagnostics, but surprisingly a functional version has never been available.

Fred Ford, a summer student who is working as a spare operator in both the S/370 and 7094 areas, is developing his programming skills with a rather exotic extracurricular project. Using the interactive APL PLUS system, Fred is developing a program to scan poetry! If all goes well, he plans to submit a paper on this novel computer application to the CIPS computer show contest.

GENERAL NEWS

K. C. Patnaik

CRF Users' Meeting

The monthly Users' Meeting was held in the Sandford Fleming Laboratories, Room SF 222, at 3:00 p.m. on Friday, June 22, 1973.

Clyde Stevens of CRF answered users' queries about the Analog/Hybrid computing systems.

The next CRF Users' Meeting will be held in Room SF222, Sandford Fleming Laboratories at 3:00 p.m. on Friday, July 27, 1973.

Expansion of 360/44 Core Memory

The final production Model of the 360/44 memory expansion has now been installed on the 360/44. The system is now running with 448K core and with the following standard partition configuration.

```
'P0=(J,60K),P1=(WTR,16K),P2=(BED,220K),P3=(DC,90K),P3=last,end'
```

The memory expansion will now undergo extensive testing by CRF before its final acceptance.

The CRF/UTCC Merger

The merger of the Computer Research Facility and the University of Toronto Computer Centre has now been approved by the CRF Policy Committee, the UTCC Policy Committee and PACCPP. All that is now required to make it final is the approval of Prof. Forster, Vice President and Provost.

The date for the merger has been set for September 1st, 1973 and it is expected that final approval will be received by that date.

As a result of the merger the CRF Policy Committee will be discontinued and CRF policy will now be determined by the UTCC Policy Committee. A new committee called the CRF Users Committee will be established under the chairmanship of Prof. K.C. Smith (Department of Electrical Engineering) to replace the CRF Policy Committee.

New Schedule of Charges for 1973-74

The new schedule of charges for 1973-74 incorporates many new changes. Users will be pleased to find that almost all the news is good news.

The new schedule will be mailed to CRF users who are on the mailing list, and copies will be available in the CRF office, Room SF214, Sandford Fleming Laboratories. The new schedule will be published in the UTCC USERBOOK.

New Billing Procedure

As of July 1st, 1973, CRF will be sending account holders their billing statements monthly instead of weekly. The monthly billing statements will be issued on the first Tuesday of every month.

Authorization Codes

The current procedure of renewing authorization codes quarterly is being discontinued. As of September 15th, 1973 all authorization codes will be issued for a period of one year so that the codes will cover the academic year.

To simplify this change the current codes will be extended until September 15th, and all codes will be renewed at that date.

The change will also mean that codes may be cancelled at anytime instead of quarterly as at present.

Grade A Operators

Up until now CRF has trained students to become Grade A Operators free of charge. This training was based on the student's need for a hands-on machine. To offset the cost of this training CRF charged full rates for computer service outside normal hours.

As of July 1st, CRF will charge for Grade A Operator training. To compensate for this the cost of computing outside normal hours is being reduced.

This training will now be available to all students and there will be no special requirement for hands-on use. For further information please contact K.C. Patnaik at 928-8853.

SOFTWARE INFORMATION

Free Day Cancelled and Rescheduled

The "FREE DAY" to test O/S release 21.6 on Tuesday, July 3, 1973 was cancelled because of hardware errors. The "FREE DAY" was rescheduled for July 19, 1973.

ALGOLW Procedures

As of July 4, 1973 three new ALGOLW procedures have been added to the SYS1.PROCLIB. The procedures may be invoked by coding:

ALGOLWG - compiles and executes in one step
ALGOLWCL - compiles and puts in program library
ALGWCLG - compiles/link edits and executes with the capability of executing fortran subprograms.

"ULTRADEX" Documentation

Documentation is now available for ULTRADEX, CRF's sophisticated automatic indexing system. Those who are interested please contact Malcolm Hindley-Smith at 928-8992.

Interactive "SPITBOL" at CRF

We would like to remind our users that an interactive "SPITBOL" capability is available at CRF. Those wishing to access their "SPITBOL" programs interactively may do so via the 2250 display unit. If interested, contact Malcolm Hindley-Smith at 928-8992.

CRF "SMALL COMPUTER SEMINARS"

CRF is planning a series of "Small Computer Seminars" to commence sometime in the fall and continue once or twice a month throughout the school year.

Suppliers and innovators of specialized computing equipment will be invited to come and talk briefly about current developments and future trends within their companies. Afterwards they will answer questions put by members of the audience.

The seminars will be aimed at the scientific and technical community, but other interested individuals are welcome to attend.

The idea is to give users and would-be users of minicomputers and related equipment an opportunity to see what is currently available and anticipate future trends.

So far DEC, Datagen, Hewlett-Packard and Interface Systems Inc. have expressed enthusiasm about participating, and others will be contacted.

If you have any suggestions about topics you would like to see covered or companies you would like to see represented, please get in touch with Malcolm Hindley-Smith at 928-8992.

UTCC DIRECTORY

	ROOM	PHONE 928-
DIRECTOR		
John C. Wilson	49 St.Geo	6496
USER LIAISON OFFICER		
Bill Greene	SF128A	2694
Information Office	SF128	4990 or 4991
ADMINISTRATION MANAGER		
Jerry Palter	SF137	8948
AUTHORIZATION CLERKS		
Nancy Pocock (S/370 + 7094)	SF139	8702
Yvonne Bowen (Interactive)	49 St. Geo	8703
S/370 SERVICES		
MANAGER		
Dave McNaughton	SF143	6281
INPUT/OUTPUT SUPERVISOR		
Derry Cox	SF112	7092
USER SERVICES SUPERVISOR		
Stan Yagi	SF112	7331
SYSTEMS SUPPORT SUPERVISOR		
Rein Mikkor	SF112	5058
PROGRAM ADVISORS	SF103	8599
INTERACTIVE TERMINAL SYSTEMS		
MANAGER		
Sam Goldfarb	49 St.Geo	3787
7094 SERVICES		
MANAGER		
Joyce Walton	BT1207	7094

JOB STATUS QUERIES:

SYSTEM/370	7373
7094	7094

INTERACTIVE TERMINAL SYSTEMS:

System Status	6234
APL	7200
ATS	7100
CPS	6200

CONVERSATIONAL REMOTE JOB ENTRY (CRJE)

2741: Tel: 7223 7381 7386

TTY: 7445

UTCC COMPUTER EQUIPMENT

(a) SYSTEM/370 MODEL 165

- located in SF 106/110/111
- provides General Purpose Job Stream, High Speed Job Stream and Conversational Remote Job Entry services
- 2048K bytes of memory
- 1 drum
- 6 disk drives IBM (3330)
- 8 disk drives IBM (2314)
- 6 magnetic tape drives (6 9-track and 2 7-track)
- 6 display consoles
- 6 printers
- 5 card readers
- 1 card punch
- 7 remote batch terminals
- 1 paper tape reader
- CALCOMP plotter (11" and 30")
- OS/MVT with HASP

(b) SYSTEM/360 MODEL 65

- located in Room 333 McLennan Physical Laboratories
- provides Interactive Systems Service
- 1536K bytes of core
- 16 disk drives (2314)
- 2 9-track magnetic tape drives
- 1 printer
- 1 card reader
- 1 card punch
- 120 typewriter terminals

- OS/MVT with APL, ATS, and CPS

(c) 7094 II

- located in Room 1203 Burton Tower
- 32K words of core
- 1 disk
- 8 magnetic tape drives
- input/output via a 1401 computer

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TORONTO, CANADA.

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